

# Implant Esthetic Restoration in Ridge Deficiencies in Cases of Trauma: A Case Report

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The long-term success of implant therapy does not depend solely on osseointegration, but the gingival architecture surrounding the implant system. It becomes very important to restore the gingival tissues in the areas that enhance one's esthetics. The esthetic zone can be defined as any dentoalveolar area of esthetic concern to the patient. The anterior maxillary teeth in the esthetic zone usually extend from first premolar to first premolar, but in some individuals can extend as far distally as the first molar. The patients requiring esthetic reconstruction at the site of trauma pose a great problem in implant placement and prosthetic restoration as scar tissue interferes with the same. To be successful, an implant-supported restoration should meet biological, mechanical, and esthetic goals. The most challenging situation is when esthetics is of prime concern in deficient ridge cases. This clinical report presents problems faced during implant placement and the sequential procedure to rehabilitate with an implant that was esthetically harmonized at the site of trauma.

**Key Words:** *trauma, scar tissue, electrocautry, dentascan*

## INTRODUCTION

**D**espite the availability of various implant and abutment types in the market, it often becomes quite challenging to achieve the biological and esthetic goals in a patient who has ridge deficiencies because of trauma.<sup>1</sup> Oral implantology is often complicated by the limitation faced at the site of trauma that is covered by dense scar tissue. Sometimes this scar tissue covers the alveolar ridge that hinders the implant placement as well as prosthetic rehabilitation.<sup>2</sup> Challenges do occur in selecting implants because the amount of bone in such regions is much reduced, and in performing the restorative portion during the second-stage surgical procedure, scar tissue causes problems in (1) exposing the submerged implant, (2) controlling

the thickness of the soft tissues surrounding the implants, (3) creating attached gingiva around the implants, and (4) ensuring proper abutment seating.<sup>3</sup>

Sometimes advanced surgical procedures are designed to overcome these difficulties. It is important to carefully weigh the benefits versus the risks of these procedures. Prosthetic rehabilitation with a minor periodontal surgical procedure is sometimes very beneficial in restoring this type of case. Reports have demonstrated that nonsurgical management of soft-tissue deficiencies is equally beneficial and can fulfill the goals of successful implant therapy.<sup>4,5</sup>

Sometimes edentulism is associated with extensive or limited soft-tissue deficiencies due to trauma. This loss requires tissue reconstruction therapy to restore the ideal emergence profile, which is indispensable for a good esthetic result.<sup>6-8</sup> This case report discusses the concerns, difficulties, and prosthetic challenges that must be addressed when restoring a patient with residual ridge resorption to acceptable function and esthetics.

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The present case is a report of the combination of a prosthetic and minor periodontal surgical procedure in restoring the esthetics of the patient who met with a road side accident and lost his anterior teeth.

### CASE REPORT

A 25-year-old patient reported to the department with missing 11, 12, 13, and 14 teeth, which he had lost in a road accident. He had undergone surgery 3 months before for bone plating in the mandible. On examination, it was found that the edentulous site had scar tissue and thick mucosa (Figure 1).

The patient wanted fixed prostheses in the place of the missing teeth. Diagnostic casts were made, and orthopantomography (OPG) was done (Figure 2). For more precise bone dimensions, dentascanner was also advised. Images were analyzed for various prosthetic options for the replacement of the missing teeth. The patient received an explanation of the possibility of replacement of the missing tooth with an implant.

#### Stage 1

Three implants (Noble Biocare Tapered) were planned to be placed in region of 11, 12, and 13. A surgical procedure was planned. A crestal incision in the region of 11, 12, 13, and 14 and a releasing incision in the labial mucosa of the 11 and 21 region were made. A full-thickness mucoperiosteal flap was reflected. An initial drill of diameter 3.4 mm was placed to a depth of 13 mm in the region of 13. It was followed by a 4.3-mm diameter drill. This was followed by the use of a screw tap. Implant of dimension 4.3-mm diameter (RP) and 13-mm length was wrenched into place and covered with a cover screw. The same procedure was followed for the second implant in the region of 12. An initial drill of diameter 3.4 mm followed by 4.3 mm was placed to a depth of 13 mm. This was followed by the use of a screw tap. Implant of dimension 4.3-mm diameter and 13-mm length was wrenched into place and covered with a cover screw. For the third implant in the region of 11, a drill diameter of 3.4 mm was placed to a depth of 13 mm. This was followed by the use of a screw tap. Implant of dimension 3.4-mm diameter (NP) and 13-mm length was wrenched into place and covered with a cover screw (Figure 3). During drilling, the parallelism of

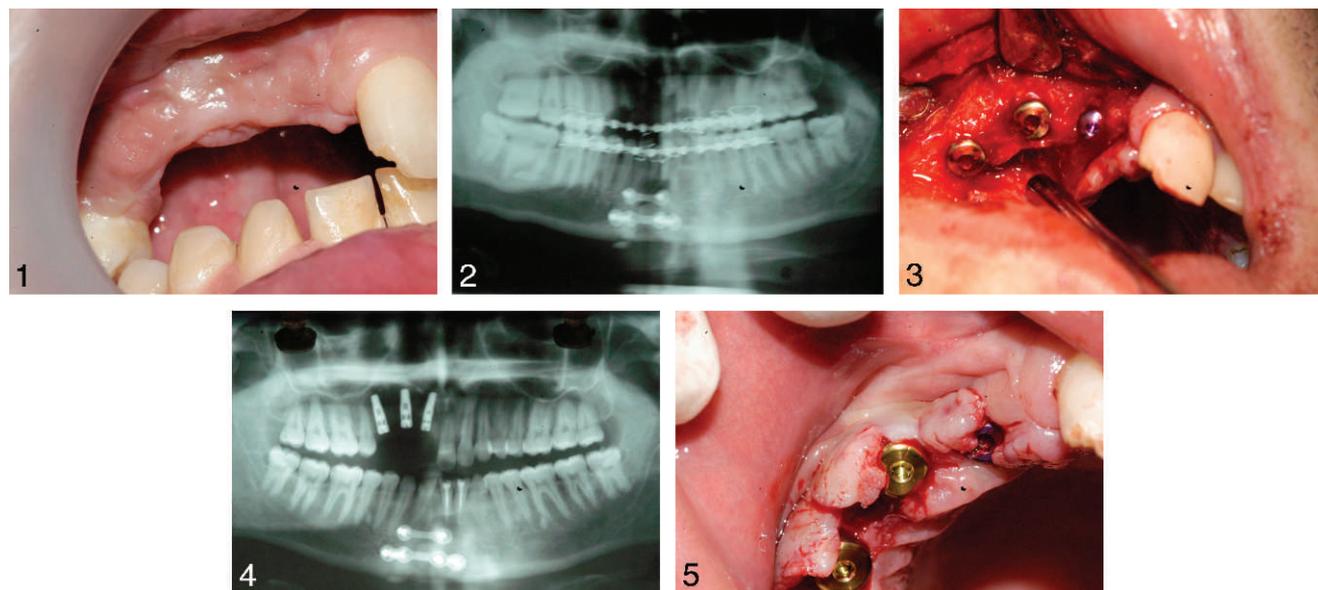
the implants was checked frequently by placing direction indicators in the drilled space. The mucoperiosteal flap was replaced, and nonabsorbable Mersilk 3-0 (Ethicon, Johnson & Johnson, New Brunswick, NJ) sutures were placed. Postoperative medication was administered, and postoperative OPG was done (Figure 4).

#### Stage 2

A crestal incision in the region of 11, 12, 13, and 14 and a releasing incision in the labial mucosa of the 11 and 21 region were made. A full-thickness mucoperiosteal flap was reflected. Implants were exposed, and the cover screws were unscrewed. Healing caps were screwed in the implants (Figure 5). After 1 week, the healing caps were removed, but an abundance of scar tissue hindered the seating of the abutment. Electrocautery was done to remove the tissue around the implant to ensure the proper seating of the abutment and to help in making the impression for the prosthesis. Final impressions were made with impression posts in place (Figure 6). A twin-mix technique was employed using light body and putty-consistency elastomers (Figure 7). Metal try-in was done (Figure 8). Excessive scar tissues again hampered in a metal try-in. Again, electrocautery was done, and oversized temporaries were made to reflect the dense tissue. No. 21 was rotated due to the trauma, and composite veneering was done to align it to the temporaries, which were replaced with the porcelain laminate at later stage. After 1 week, metal try-in was again done. Preglazed try-in was done with the gingival porcelain restoring the lost height of the gingiva during the trauma. Final restoration was cemented after the prosthesis was glazed (Figures 9 and 10).

#### DISCUSSION

Establishing esthetics remains a challenge in trauma patients who have lost bone and in whom the remaining alveolar bone is covered with dense, fibrous scar tissues. Surgery remains the treatment of choice in most of the cases that can give good results. In patients who have already undergone multiple surgeries, because of the fractures in the dentofacial region, additional surgeries for replacing the teeth are not preferred. In cases of ridge deficiencies in trauma patients, it often remains



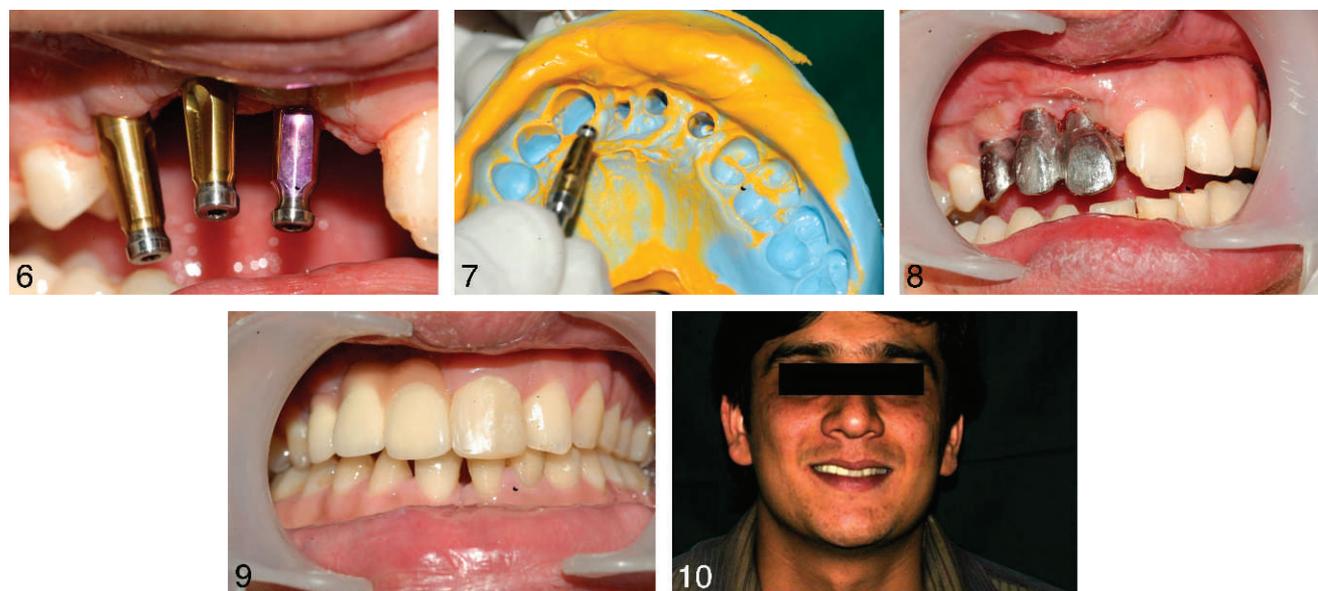
**FIGURES 1–5.** **FIGURE 1.** Trauma site with scar tissue. **FIGURE 2.** Preoperative orthopantomogram (OPG). **FIGURE 3.** Implant placement. **FIGURE 4.** Postimplant placement OPG. **FIGURE 5.** Healing caps in place.

challenging to manage the scar tissues and ridge deficiencies nonsurgically. With appropriate diagnosis and thorough planning that includes clinical examinations, 3-dimensional imaging, diagnostic wax-ups, and consideration of patient expectations, a minor surgical procedure to manage scar tissue, implant placement in deficient bone region, and prosthetic reconstruction can lead to an ideal restoration.

A report by Coachman<sup>9</sup> outlines a rationale for

consideration of artificial gingiva when planning dental prostheses. Prosthetic gingiva can overcome the limitations of grafting and should be a consideration in the initial treatment plan.<sup>9</sup> Gingival porcelains have been used extensively for the replacement of lost periodontal tissue and can drastically improve the extraoral and intraoral esthetics of the patient by providing good lip support.<sup>10</sup>

Prosthetic concerns about atrophic alveolar



**FIGURES 6–10.** **FIGURE 6.** Impression posts in place. **FIGURE 7.** Posts with implant analogue in final impressions. **FIGURE 8.** Metal try-in. **FIGURE 9.** Final restoration. **FIGURE 10.** Postoperative.

ridges remain a topic that is quite in discussion nowadays.<sup>11</sup> The complexity of the prosthodontic rehabilitation needed to restore patients with residual ridge resorption is also reviewed, and a combined consensus is made that prosthetic rehabilitation is much preferred over surgical correction in terms of esthetics and function with the implant prosthesis.

Periodontal surgical procedures may not always offer a predictable level of success in the reproduction of a natural gingival architecture. There are different nonsurgical approaches for the management of soft-tissue deficiencies in anterior implant-supported restorations.<sup>12</sup> Minor periodontal surgical procedures such as electrocautry can help in completing second-stage surgical procedures. Lost height of the alveolar bone can be restored with the gingival porcelain within the physiologic limits. A thorough treatment planning and diagnosis in trauma patients results in an esthetically and functionally sound restoration. Clinically acceptable esthetic outcomes of anterior implant restorations can be achieved by using custom abutments and gingiva-colored dental porcelain.<sup>13</sup>

#### SUMMARY

The recent concepts of tooth restoration are not restricted to basic needs but have evolved to cosmetic or esthetic corrections to uplift the self-esteem and confidence of man. The impetus of this clinical report is to describe a stepwise procedure in restoring the anterior dentition with implant restoration at the traumatic site.

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